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PENSOFT

New records of the Kinkajou, *Potos flavus* (Schreber, 1774) (Mammalia, Carnivora) in the Cerrado

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Abstract

We provide new records of *Potos flavus* from 2 localities in the states of Goiás and Mato Grosso, central Brazil. These records extend the geographical distribution of this species in the Cerrado biome and highlights the importance of future research on this species. These new distributional data may contribute to a re-evaluation of its conservation status.

Key words

Goiás; Central Plateau; Cerrado; central Brazil; roadkill; Procyonidae.

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Introduction

The Kinkajou, *Potos flavus* (Schreber 1774) (Mammalia, Carnivora, Procyonidae), lives in the tropical rainforests and dry forests with closed canopy. It is a small procyonid having nocturnal and arboreal habits (Kays 1999, Sampaio et al. 2013). *Potos flavus* has rounded ears, a long and flexible tongue, prehensile tail, and woolly fur (Ford and Hoffmann 1988). Pelage coloration is predominantly reddish but some individuals may have a sagittal grey band along the back (Ford and Hoffmann 1988). It is a frugivore/omnivore (Emmons and Feer 1997, Paglia et al. 2012), because most of its diet consists of fruit, but this is complemented by seeds, flowers, honey, and some insects (Ford and Hoffmann 1988, Kays 1999, Kays et al. 2008). Reproduction occurs at intervals of 1 or 2 years and females give birth to 1 offspring (Kays and Gittleman 2001, Wilson and Reeder 2005, Wilson and Mittermeier 2009, Sampaio et al. 2013).

Typical of tropical environments (Ford and Hoffmann 1988), this species occurs in forested areas in the Americas, from southern Mexico to the Atlantic Forest in southeastern Brazil (Ford and Hoffmann 1988, Kays et al. 2008, Helgen et al. 2016). It is apparently abundant in the Amazon, with its occurrences in anthropized areas (Sampaio et al. 2013). Gonzaga and Rajão (2002) compiled

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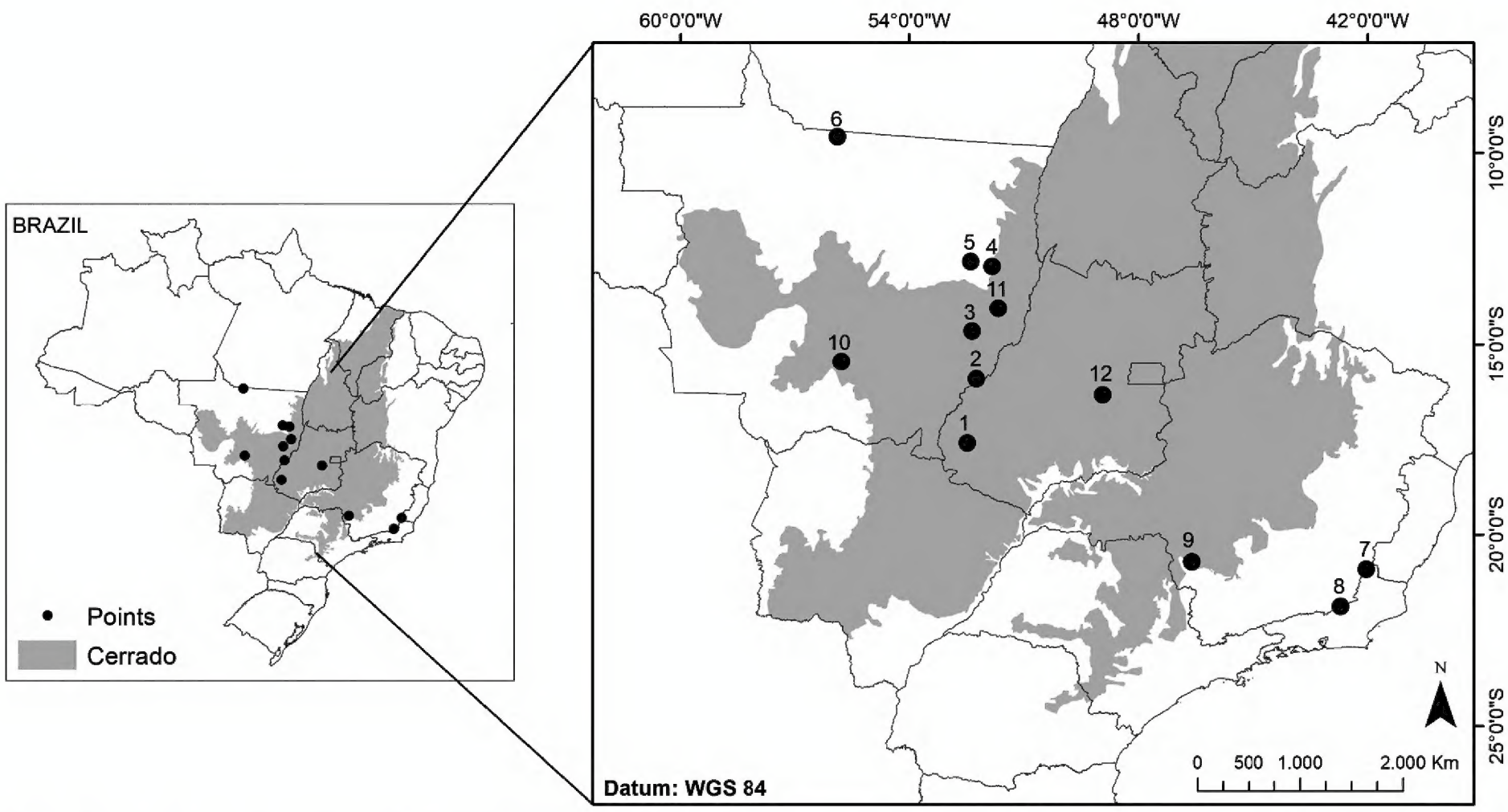

Figure 1. Occurrences of *Potos flavus* in central Brazil. Localities 1–3 represent new or unpublished records reported herein. Localities 4 –10 represent previously known occurrences. See Table 1 for locality names, geographic coordinates, and sources of the data.

records of *P. flavus* in the Atlantic Forest for the Brazilian states of Alagoas, Bahia, Espírito Santo, Minas Gerais, and Rio de Janeiro. Because there are a few historical records of *P. flavus* for the Cerrado of Mato Grosso (Cope 1989, Ford and Hoffmann 1998), this species was determined to be Data Deficient for the Cerrado (Sampaio et al. 2013).

The occurrence of *P. flavus* in the Cerrado is based only on historical records, some of them very imprecise, as shown by Vieira (1952). To make clearer the distribution of *P. flavus* in the Cerrado, we present new and historical records for the species in this biome.

Methods

Our new record of *P. flavus* was made during a wildlife roadkill program in southeastern Goiás in March 2014. We add unpublished records of this species from the following sources: the collection of the Ornithological Museum Foundation of Goiânia, and the Collection of Mammals of the Mato Grosso State University (UNEMAT).

The region where our roadkill specimen was found is classified as Aw of Köppen (Silva et al. 2008), with a rainy season (October to April) and a dry season (May to September) (Silva et al. 2006).

Results

New records (Fig. 1). Goiás: near Mineiros city: roadkill, on the BR-364 highway (17°35′34″ S, 052°28′59″ W), coll. Jefferson E. S. Miranda, Fabiano R. Melo and Seixas R. Oliveira, March 2014 (1 individual, not vouchered). The body was badly damaged, but with intact paws and tail, which helped us with the identification (Fig. 2). The surroundings of the record area are formed

Table 1. Occurrences of *Potos flavus* in some regions of Brazil. The occurrence number corresponds to the numbered dots in Figure 1. Datum for geographic coordinates: WGS84.

No.	Locality	State	Geographic coordinates		Source
			Longitude	Latitude	
1	BR 364, Mineiros	Goiás	52°28′59″W	017°35′34″ S	New record
2	BR 158, Aragarças	Goiás	52°14′30″W	015°54′09″ S	Historial record
3	Nova Xavantina	Mato Grosso	52°20′41″W	014°41′24″ S	Historial record
4	Ribeirão Cascalheira	Mato Grosso	51°46′00″W	012°49′00″ S	Pine et al. 1970
5	Fazenda Tanguro, Querência	Mato Grosso	52°22 00″W	012°54′00″ S	Oliveira et al. 2010
6	Parque Estadual Cristalino	Mato Grosso	55°54′41″W	009°31′38″ S	Rocha et al. 2012
7	RPPN "Dr. Marcos Vidigal Vasconcelos", Tombos	Minas Gerais	42°04′19″W	020°53′44″ S	Melo et al. 2005
8	Além Paraíba	Minas Gerais	42°43′38″W	021°49′46″ S	Gonzaga and Rajão, 2002
9	Passos	Minas Gerais	45°37′00″W	020°43′00″ S	Gonzaga and Rajão, 2002
10	Chapada dos Guimarães	Mato Grosso	55°40′28″W	015°28′04″ S	Smith, 1885
11	Cocalinho	Mato Grosso	51°40′30″W	014°04′13″ S	Muséum d'histoire naturelle de la Ville de Genève
12	Anápolis	Goiás	48°56′35″W	016°20′09″ S	Gilmore 1936

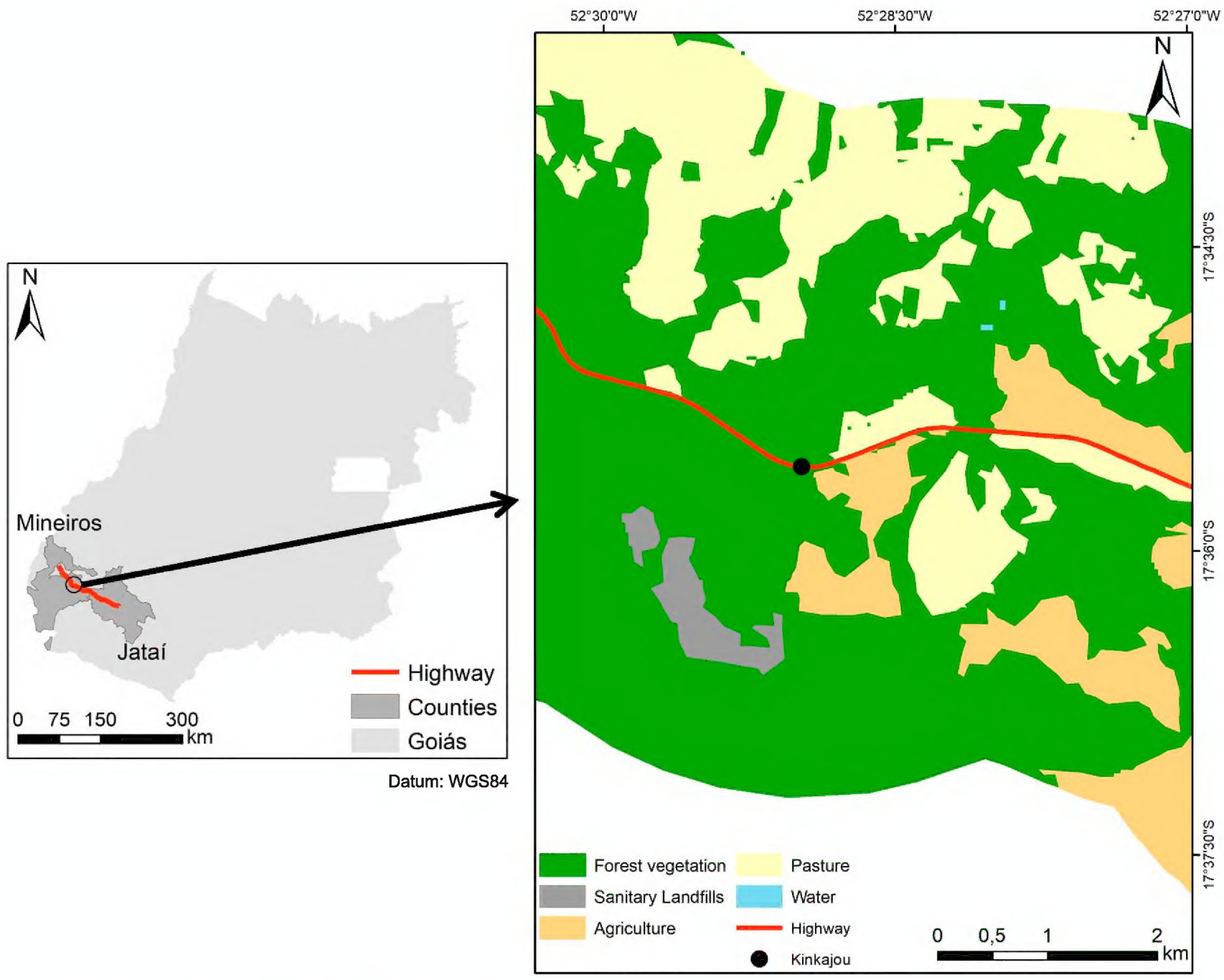

Figure 3. Habitats and land use at the site of the new record (BR-364 highway, Goiás, Brazil).

by pasture, agriculture, and a seemingly well-preserved vegetation (Fig. 3).

Historical records. Goiás: Aragarças, coll. José Hidasi, 1953 (1 skin, Ornithological Museum Foundation, in the city of Goiânia 1120) (J. Hidasi pers. comm.). Mato Grosso: Nova Xavantina: roadkill, on the BR-158 near the urban area of the city (14°41′24″ S, 052°20′41″ W), coll. P. Matos, April 2015 (1 skin, female, UNEMAT CM679).

Identification. The road-killed specimen was identified as *Potos flavus* from its predominantly reddish pelage coloration, including muzzle and legs. However, one should not only consider the pelage color alone when differentiating *Potos* from other procyonid genera (Sampaio et al. 2011). In addition, it had a prehensile tail, a distinct trait that allowed us to differentiate between *Potos flavus* and *Bassaricyon alleni* Thomas, 1880, a similar species that also occurs in Brazil and whose morphological characteristics usually lead to misidentifications in the field (Cheida et al. 2011, Sampaio et al. 2011, Sampaio et al. 2013).

Figure 2. *Potos flavus*. Roadkill on the BR-364 highway (17°35′34″ S, 052°28′59″ W), Goiás, Brazil, March 2014.

Discussion

Gonzaga and Rajão (2002) suggested that the limits of occurrence of *P. flavus* in the Atlantic Forest might be extended to the north and south with further studies. Melo et al. (2005) corroborated this hypothesis with records in the Amazon and Atlantic Forest and that the central areas were important for the evolution of mammals; for some species, connections between the main biomes may have been more recent (Costa 2003).

The distribution of *P. flavus* described by Sampaio et al. (2013) differs from the IUCN map (Kays et al. 2008, Helgen et al. 2016), which does not place this species within the Cerrado. This is probably because at that time there were no recent records of *P. flavus* in this biome. In this sense, there are 2 points to be considered.

First, there are historical records from transition areas between the Cerrado and other biomes, such as

the records from Cocalinho and Chapada dos Guimarães (both in Mato Grosso), as well as 5 records from Anápolis (Goiás) in 1937. The record of Cocalinho, (Fig. 1, point 11), collected in 1774, is based on a skin deposited in the Muséum d'histoire naturelle de la Ville de Genève (Geneva, Swizterland). From Chapada dos Guimarães (Fig. 1, point 10), there are 2 specimens in the American Museum of Natural History (New York, USA), both collected in 1885, 1 male and 1 of an unidentified sex. The 5 records from Anápolis are based on specimens collected in 1937 deposited in the American Museum of Natural History (Fig. 1, point 12). These records should be considered in future assessments of the conservation status of *Potos flavus* in the Cerrado.

Second, our new records should be used to reassess the conservation status and distribution of *P. flavus*, as these records confirm the continued existence of this species in the Cerrado. Thus, a re-evaluation of the conservation status of *P. flavus* in the Cerrado might determine that this species in this biome may belong to one of the Red List categories for threatened species (IUCN 2012). In addition, the known distribution map of the species must be changed to include this biome as the current occurrence area.

Thus, our study confirms the continued existence of *P. flavus* in the Cerrado, indicating that despite being a region occupied by monoculture, we can still find areas in good state of preservation, which need to be further explored. In addition, this study also reinforces the hypothesis that deciduous forests in the interior of the country were and still are characterized as important connections from the recent past that greatly influenced the processes of speciation of the fauna present in our tropical forests (Willis 1992, Costa 2003).

Finally, we suggest that surveys for records of the species must be carried out, mainly in the region of the basins of the Tocantins and Araguaia rivers, which it seems that this region of the Cerrado includes the most records of *P. flavus* that it was found in the literature until now. However, searching the species in other forested areas of the Cerrado is important to enhance its knowledge and to evaluate how many populations there are and point out their sizes. Only after additional study will it be possible to reassess the conservation status of *P. flavus* and, consequently, to prioritize steps for its conservation in the Cerrado.

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Authors' Contributions

JESM and FRM collected the data, MBF drew the map. JESM, FRM, MBF, SRO and RKU wrote the text.

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